AMENDMENTS

Applicants request that the claims be amended as set forth below. Since prosecution on the merits has been closed, Applicants can no longer amend the claims as of right. The permission of the Examiner is required. If the Examiner consents and enters the proposed amendments, this listing of claims will replace all prior versions, and listing, of claims in the application.

1. (Original) A method for contemporaneously utilizing seismic data in the pre-stack seismic domain and the post-stack seismic domain, comprising:

initiating a higher order probe at a three-dimensional coordinate in a post-stack seismic volume; and

instantiating a pre-stack seismic data content for the higher order probe.

2. (Original) The method of claim 1, wherein initiating the higher order probe from the three-dimensional coordinate includes initiating the higher order probe at a trace location in the post-stack seismic volume.

3. (Original) The method of claim 2, wherein the trace location comprises a binning location.

4. (Original) The method of claim 3, wherein the binning location comprises one of a common midpoint location, a common conversion point location or a common image point location

5. (Original) The method of claim 2, wherein the trace location comprises a seismic navigation location.

6. (Original) The method of claim 5, wherein the seismic navigation comprises one of a common receiver location or a common shot location.

7. (Original) The method of claim 1, wherein initiating the higher order probe from the three-dimensional coordinate includes initiating the higher order probe at a velocity analysis location in the post-stack seismic volume.

8. (Original) The method of claim 1, wherein initiating the higher order probe at the velocity analysis location includes initiating the higher order probe at a velocity update location in the post-stack seismic volume.

9. (Original) The method of claim 7, wherein initiating the higher order probe at the velocity analysis location includes providing a map of analysis locations.

10. (Original) The method of claim 7, wherein the analysis location comprises one of a common midpoint location, a common conversion point and a common image point location.

11. (Original) The method of claim 7, wherein the velocity analysis location includes a *Vp*, a *Vs* or a *Vp/Vs* velocity analysis location.

12. (Original) The method of claim 1, wherein initiating the higher order probe from the three-dimensional coordinate includes selecting a type for the higher order probe.

13. (Original) The method of claim 12, selecting the type for the higher order probe comprises selecting one of a common midpoint gather, a common conversion point gather, a common image point gather, a common shot gather, a common receiver gather, a semblance panel, a gamma scan and a focusing panel.

14. (Original) The method of claim 1, wherein initiating the higher order probe from the three-dimensional coordinate includes setting a multi-dimensional frame.

15. (Original) The method of claim 14, wherein setting the multi-dimensional frame includes graphically setting the multi-dimensional frame.

16. (Original) The method of claim 14, wherein setting the multi-dimensional frame includes setting at least one of time window, depth window, offset/velocity range, offset/velocity scale, trace decimation, azimuths, and azimuth artificial reorientation.

17. (Original) The method of claim 1, wherein instantiating the higher order probe at the three-dimensional coordinate includes attaching the collective higher order probe to the three-dimensional reference system.

18. (Original) The method of claim 17, further comprising:
rotating, translating or zooming in or out the scene; and
rotating, translating or zooming in or out the higher order probe with the scene.

19. (Original) The method of claim 1, wherein instantiating the higher order probe at the three-dimensional coordinate includes detaching the higher order probe from the three-dimensional reference system.

20. (Original) The method of claim 19, further comprising manipulating the detached higher order probe.

21. (Original) The method of claim 20, wherein manipulating the detached higher order probe includes at least one of rotation, translation, rescaling, slicing, and setting visual attributes.

22. (Original) The method of claim 1, further comprising:
initiating at least one secondary higher order probe at secondary three-dimensional coordinates in the post-stack seismic volume; and
instantiating the secondary pre-stack seismic data content for the secondary higher order probe.

23. (Original) The method of claim 22, wherein initiating the second higher order probe includes initiating a higher order probe independent of the first higher order probe.

24. (Original) The method of claim 22, wherein the first and secondary higher order probes comprise a collective probe.

25. (Original) The method of claim 22, wherein initiating the second higher order probe includes initiating a higher order probe dependent on the first higher order probe.

26. (Original) The method of claim 1, further comprising:

slicing through the post-stack seismic domain; and

automatically instantiating the higher order probe on each slice while slicing through the post-stack seismic domain.

27. (Original) The method of claim 1, further comprising:

seeding with interpretation at least one of the pre-stack seismic domain and the post-stack seismic domain; and

spreading the interpretation in the other domain.

28. (Original) A program storage medium encoded with instructions that, when executed by a computer, perform a method for contemporaneously utilizing seismic data in the pre-stack seismic domain and the post-stack seismic domain, the method comprising:

initiating a higher order probe at a three-dimensional coordinate in a post-stack seismic volume; and

instantiating a pre-stack seismic data content for the higher order probe.

29. (Original) The program storage medium of claim 28, wherein initiating the higher order probe from the three-dimensional coordinate in the encoded method includes initiating the higher order probe at a trace location in the post-stack seismic volume.

30. (Original) The program storage medium of claim 28, wherein initiating the higher order probe from the three-dimensional coordinate in the encoded method includes initiating the higher order probe at a velocity analysis location in the post-stack seismic volume.

31. (Original) The program storage medium of claim 28, wherein initiating the higher order probe from the three-dimensional coordinate in the encoded method includes selecting a type for the higher order probe.

32. (Original) The program storage medium of claim 28, wherein initiating the higher order probe from the three-dimensional coordinate in the encoded method includes setting a multi-dimensional frame.

33. (Original) The program storage medium of claim 28, wherein instantiating the higher order probe at the three-dimensional coordinate in the encoded method includes attaching the collective higher order probe to the three-dimensional reference system.

34. (Original) The program storage medium of claim 28, wherein instantiating the higher order probe at the three-dimensional coordinate in the encoded method includes detaching the higher order probe from the three-dimensional reference system.

35. (Original) The program storage medium of claim 28, wherein the encoded method further comprises:

initiating at least one secondary higher order probe at secondary three-dimensional coordinates in the post-stack seismic volume; and

instantiating the secondary pre-stack seismic data content for the secondary higher order probe.

36. (Currently Amended) The program storage medium of claim 28, wherein the encoded method further comprises:

slicing through the post-stack seismic domain; and

automatically instantiating the higher order probe on each slice while slicing ~~throught~~ through the post-stack seismic domain.

37. (Original) The program storage medium of claim 28, wherein the encoded method further comprises:

seeding with interpretation at least one of the pre-stack seismic domain and the post-stack seismic domain; and

spreading the interpretation in the other domain.

38. (Currently Amended) A ~~computer~~ computing apparatus programmed to perform a method for contemporaneously utilizing seismic data in the pre-stack seismic domain and the post-stack seismic domain, the method comprising:

initiating a higher order probe at a three-dimensional coordinate in a post-stack seismic volume; and

instantiating a pre-stack seismic data content for the higher order probe.

39. (Currently Amended) The ~~computer~~ computing apparatus of claim 38, wherein initiating the higher order probe from the three-dimensional coordinate in the programmed method includes initiating the higher order probe at a trace location in the post-stack seismic volume.

40. (Currently Amended) The ~~computer~~ computing apparatus of claim 38, wherein initiating the higher order probe from the three-dimensional coordinate in the programmed method includes initiating the higher order probe at a velocity analysis location in the post-stack seismic volume.

41. (Currently Amended) The ~~computer~~ computing apparatus of claim 38, wherein initiating the higher order probe from the three-dimensional coordinate in the programmed method includes selecting a type for the higher order probe.

42. (Currently Amended) The ~~computer~~ computing apparatus of claim 38, wherein initiating the higher order probe from the three-dimensional coordinate in the programmed method includes setting a multi-dimensional frame.

43. (Currently Amended) The ~~computer~~ computing apparatus of claim 38, wherein instantiating the higher order probe at the three-dimensional coordinate in the programmed method includes attaching the collective higher order probe to the three-dimensional reference system.

44. (Currently Amended) The ~~computer~~ computing apparatus of claim 38, wherein instantiating the higher order probe at the three-dimensional coordinate in the programmed method includes detaching the higher order probe from the three-dimensional reference system.

45. (Currently Amended) The ~~computer~~ computing apparatus of claim 38, in the programmed method further comprises:

initiating at least one secondary higher order probe at secondary three-dimensional coordinates in the post-stack seismic volume; and

instantiating the secondary pre-stack seismic data content for the secondary higher order probe.

46. (Currently Amended) The ~~computer~~ computing apparatus of claim 38, in the programmed method further comprises:

slicing through the post-stack seismic domain; and

automatically instantiating the higher order probe on each slice while slicing through the post-stack seismic domain.

47. (Currently Amended) The ~~computer~~ computing apparatus of claim 38, wherein the programmed method further comprises:

seeding with interpretation at least one of the pre-stack seismic domain and the post-stack seismic domain; and

spreading the interpretation in the other domain.

48. (Original) A method for contemporaneously navigating seismic data in the pre-stack seismic domain and the post-stack seismic domain, comprising:

initiating a collective higher order probe at a plurality of three-dimensional coordinates in the post-stack seismic volume;

instantiating a pre-stack seismic data content for the collective higher order probe;

slicing through the post-stack seismic domain; and

automatically instantiating the collective higher order probe on each slice while slicing through the post-stack seismic domain.

49. (Original) The method of claim 48, wherein initiating the collective higher order probe from the three-dimensional coordinates includes initiating the collective higher order probe at a plurality of trace locations in the post-stack seismic volume.

50. (Original) The method of claim 48, wherein initiating the collective higher order probe from the three-dimensional coordinates includes initiating the collective higher order probe at a plurality of velocity analysis locations in the post-stack seismic volume.

51. (Original) The method of claim 48, wherein initiating the collective higher order probe at the velocity analysis locations includes initiating the collective higher order probe at a plurality of velocity update locations in the post-stack seismic volume.

52. (Original) The method of claim 48, wherein initiating the collective higher order probe from the three-dimensional coordinates includes selecting a type for the collective higher order probe.

53. (Original) The method of claim 48, wherein instantiating the collective higher order probe at the three-dimensional coordinates includes attaching the collective higher order probe to the three-dimensional reference system.

54. (Original) The method of claim 48, wherein instantiating the collective higher order probe at the three-dimensional coordinates includes detaching the collective higher order probe from the three-dimensional reference system.

55. (Original) A method for contemporaneously interpreting seismic data in the pre-stack seismic domain and the post-stack seismic domain, comprising:

initiating a higher order probe at a three-dimensional coordinate in a post-stack seismic volume;

instantiating a pre-stack seismic data content for the higher order probe; and

seeding at least one of the pre-stack seismic domain and the post-stack seismic domain from the other.

56. (Original) The method of claim 55, wherein initiating the higher order probe from the three-dimensional coordinate includes initiating the higher order probe at a trace location in the post-stack seismic volume.

57. (Original) The method of claim 55, wherein initiating the higher order probe from the three-dimensional coordinate includes initiating the higher order probe at a velocity analysis location in the post-stack seismic volume.

58. (Original) The method of claim 55, wherein initiating the higher order probe at the velocity analysis location includes initiating the higher order probe at a velocity update location in the post-stack seismic volume.

59. (Original) The method of claim 55, wherein initiating the higher order probe from the three-dimensional coordinate includes selecting a type for the higher order probe.

60. (Original) The method of claim 55, wherein initiating the higher order probe from the three-dimensional coordinate includes setting a multi-dimensional frame.

61. (Original) The method of claim 55, wherein instantiating the higher order probe at the three-dimensional coordinate includes attaching the collective higher order probe to the three-dimensional reference system.

62. (Original) The method of claim 55, wherein instantiating the higher order probe at the three-dimensional coordinate includes detaching the higher order probe from the three-dimensional reference system.

63. (Original) The method of claim 55, further comprising:

initiating at least one secondary higher order probe at a secondary three-dimensional coordinates in the post-stack seismic volume; and

instantiating the secondary pre-stack seismic data content for the secondary higher order probe.

64. (Original) The method of claim 55, further comprising:

slicing through the post-stack seismic domain; and

automatically instantiating the higher order probe on each slice while slicing through the post-stack seismic domain.